A new asymmetric bounded loss-based process capability index

ABSTRACT

Process capability indices such as Cp, Cpk, Cpu and Cpl are common metrics to evaluate and predict the performance of a process. Although higher process capability indices indicate higher process ñqualityò, but a high quality process does not necessarily guarantee the fewer rates of rejects. Therefore, a process capability index based on rate of rejects or real losses is more reliable and proper. This paper defines a novel process capability index called asymmetric inverted normal loss-based process capability index (AIPCI) with the aid of asymmetric inverted normal loss function. The logical idea is to compare the standard loss for a capable process with other cases. AIPCI is a bounded asymmetric process capability index and can provide a more realistic metric to evaluate and predict the performance of a process.

Keyword: Process capability index; Asymmetric inverted normal loss function; Bounded; Loss-based process capability index